

AIAA/Utah State University  
Conference on Small Satellites  
August 29- September 1, 1994

SCIENCECRAFT ABSTRACT

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The technological capabilities are now at hand to design an integrated system that combine science instruments, spacecraft and propulsion elements into a single system. The authors have called this a Sciencecraft since it is intended to provide automatic scientific observations of planetary and astrophysical objects. Integration of function allows lower mass & cost and supports a short development cycle.

A specific science mission is described in this paper, a flyby of Neptune, Triton and an object in the Kuiper belt. The SCIENCECRAFT system is described. It has electric propulsion and is capable of measuring the surface constituents and morphology of the objects visited and characterizing their atmospheres both in emission and absorption (against the sun). Miniature fields and particles experiments are incorporated that will provide interplanetary information together with details of the magnetic and electric attributes of each object.

The Sciencecraft is Delta launched and has a flight time to the Kuiper belt of 7 years. The design is such that the craft functions in a largely autonomous mode to provide low cost mission operations.